JOINT MANAGEMENT PLAN REVIEW
DRAFT ACTION PLAN: WILDLIFE DISTURBANCE-TIDEPOOLS

REVISED: 4/4/03

***Please Note**: The MBNMS and the Sanctuary Advisory Council have tasked the management plan working groups with development of draft action plans that characterize the issue or problem and identify strategies and activities that address the issue. The tidepool working group developed these strategies and activities as they met over the past several months. With this goal in mind, the progress of the group, the decisions, areas of agreement are outlined in this progressively developed action plan identifying draft goals, issue characterizations, and strategies and activities. Members of the group as well as other interested parties should look to this draft action plan as it develops as a way of tracking the group's progress and decisions.*

BACKGROUND:

Tidepools* and other components of rocky shores represent a species-rich habitat which attracts a wide array of visitors and collectors. In addition to the positive aspects of direct exposure to Sanctuary life comes the potential for various forms of human disturbance. The MBNMS currently lacks an overall strategy to address impacts to tidepools from human disturbance. Although a comprehensive regional analysis of the locations and extent of tidepool impacts is lacking, public concerns have been raised about disturbance to tidepools in many different areas of the Sanctuary including Fitzgerald Marine Reserve, Pigeon Point, Bean Hollow, Santa Cruz, Monterey, Pacific Grove, Pebble Beach, Big Sur and Cambria. Concerns raised in areas of high visitor traffic include trampling of the resources, turnover of rocks, displacement of both living and nonliving resources, and collecting of intertidal species or shells that can provide habitat.

VISITOR IMPACTS TO RESOURCES:

Tenera Environmental (2002) provided a useful literature summary from studies outside the Sanctuary region outlining the types of visitor impacts to intertidal resources. Trampling is defined as when animals are crushed or dislodged or algae are damaged. Disturbance may also occur if animals or substrate are not returned to the same location. Collecting is defined as picking animals out of the intertidal area, an activity conducted by casual individual visitors, school groups, aquaria, biosupply companies and for consumption. The largest and most common organisms are most often collected since they are most easily found. In the Sanctuary region, species selectively harvested for consumption commonly include owl limpets, black turban snails, abalone and others.

In addition to direct losses from disturbance and collecting, secondary changes may result from changes in distribution, prey availability, and habitat competition. Under heavy use, patches of habitat

become more frequently disturbed, allowing less time for recovery.

Within the Sanctuary region, several studies on human impacts have been conducted at Fitzgerald Marine Reserve in San Mateo County. Small areas of the reef that have been protected from human impact show increases in biodiversity, based on a monitoring program begun in 1994. Many typical intertidal biota are underrepresented or absent from the unprotected part of Moss Beach Reef, the most heavily visited portion of the reserve. Also, invertebrate populations have been shown to increase during fall and winter when high tides and bad weather reduce visitation.

Another source of visitor impacts to the reef is the discarding of trash, which can remain for extended periods of time and become wedged in the substrate. Various types of equipment for research, harvesting or recreational purposes which are installed or left behind on the reef may also raise public concerns, although the level of impact from these sources is unknown.

Unfortunately, although there is a wealth of knowledge about tidepool life within the Sanctuary, there have not previously been studies that focused on evaluating the extent of human impacts at tidepool locations other than Fitzgerald.

In addition to visitor impacts from trampling, substrate displacement and collecting which will be addressed in this action plan, there are a variety of other types of human activities which can have negative impacts on tidepools and rocky shores, including coastal armoring, polluted runoff, landslide disposal, small boat groundings, and behavioral disturbance of marine mammals. These important issues are referenced below but strategies to address them are included in other sections of the Joint Management Plan Review.

CURRENT MBNMS EFFORTS RELATED TO TIDEPOOLS:

Although the Sanctuary does not currently have a comprehensive regional program on tidepools, considerable staff time has been devoted to a range of individual tidepool projects in collaboration with a variety of partners. An understanding of these existing efforts provides a basis to build upon in the revised management plan.

MBNMS continues to work with various partners to produce interpretive signage to provide information about tidepools and tidepool etiquette aimed at reducing impacts to heavily visited locations. Completed signs are in place in Pacific Grove, and new ones are underway in San Mateo County and San Simeon/ Cambria region. To supplement the signage, staff assisted California State Parks in the production of a new video for school groups and teachers that focuses on tidepool etiquette, and will be working on the local distribution of that product. As part of the Sanctuary's new multicultural education program (MERITO), staff worked with the Monterey County Office of Migrant Education to provide guided intertidal field trips for Latino students, again emphasizing

tidepool etiquette.

MBNMS has supported Bay Net in its efforts to develop a docent program that includes training volunteers to interpret at strategic tidepool locations along the Pacific Grove shoreline and elswhere. Staff assisted in the development of a long-term intertidal monitoring program (LiMPETS) that provides education and training for high school students and other volunteers to collect intertidal data that can be used to detect changes in the ecosystem. Nine intertidal sites have been established within the MBNMS ranging from northern Santa Cruz County to San Simeon.

The Sanctuary has also compiled a detailed survey of the research and monitoring programs focused on rocky intertidal habitat within the Sanctuary (DeVogelaere et al, 1998). This provides basic information on tidepool resources, and also may serve as an initial estimate of locations of intertidal habitats that are accessible to visitors http://montereybay.nos.noaa.gov/research/techreports/rockyshores99/. Staff also collaborate with the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO), a consortium of academic scientists which has been conducting extensive monitoring of rocky intertidal habitats.

The Sanctuary participated in the Point Pinos Tidepool Task Force, a citizen-based group established several years ago in response to public concern about degradation of tidepool habitats in Pacific Grove. This group focused on improving public awareness about tidepool conservation and conducting research about the role of human impacts in changes that occur in rocky intertidal communities.

In collaboration with the Point Pinos Tidepool Task Force Research Committee, the Monterey Bay Sanctuary Foundation is overseeing a contract to evaluate visitor use patterns and resource impacts at Point Pinos. This study is evaluating locations, amounts and types of visitor uses, assessing documents and conducting interviews about historical patterns at the site. It also includes field monitoring of intertidal organisms to evaluate species abundance, distribution patterns, size-frequency and other factors at sites that differ in their levels of visitor use, in an attempt to distinguish visitor impacts from other factors that may influence tidepool life such as oceanographic temperature change. Sanctuary staff are also participating in a similar study of tidepool impacts which is beginning at the Fitzgerald Marine Reserve under the direction of the San Mateo County Parks and Recreation Division. This study will build on initial work conducted by the Reserve to evaluate impacts of visitor use via use of control sites that limit access. At the southern boundary of the Sanctuary, Sanctuary Advisory Council member Ron Massengill and MBNMS staff are conducting initial efforts on both tidepool monitoring and educational outreach.

The Sanctuary is also involved with a variety of other programs which could potentially be further developed as partners in addressing tidepool impacts, such as SIMoN, the Sanctuary Integrated Monitoring Network, a Sanctuary enforcement program conducted in collaboration with the state, and development of an interpretive Sanctuary Trail underway initially in Santa Cruz County.

EXISTING REGULATORY FRAMEWORK

The intertidal zone within the Sanctuary is governed by a complex array of multi-jurisdictional and occasionally conflicting laws and regulations. A brief summary is provided below, with links to more detailed descriptions.

California Fish and Game Code 8500 restricts the taking of mollusks, crustaceans, or other invertebrates for commercial purposes by any person in any tidal area without a valid tidal invertebrate permit. This restriction covers tide flats or other areas between the high tide mark and 1,000 feet beyond the low tidemark.

For non-commercial collection, a more complex set of constraints is outlined in Title 14 §29.05 of the California Code of Regulations. In general, tidal invertebrates may not be taken in any tidepool or other areas between the high tide mark and 1000 feet seaward and lateral to the low tide mark. However, exceptions are made for abalone, limpets, moon snails, turban snails, chiones, clams, cockles, mussels, rock scallops, native oysters, octopuses, squid, crabs, lobsters, shrimp, sand dollars, sea urchins and worms, all of which may be taken, unless prohibited by additional restrictions imposed in a designated protected area or special closure (see below). For non-commercial collection, the bag limit on all invertebrates for which take is authorized is 35 specimens without a permit, unless the code establishes a different specific bag limit for that species. A valid fishing license is required for collection, except for collection of algae, for which there is a 10 pound bag limit with no license required. The full text of the Code and Regulations for commercial and non-commercial collection, including various exemptions, can be found at http://www.dfg.ca.gov/fg_comm/regs.html.

In certain locations within the Sanctuary there is an additional layer of regulation imposed by city ordinance or by virtue of its state or local designation as a protected area. There is a panoply of these small protected areas within the MBNMS including state beaches, state parks, state ecological reserves, state marine reserves, state fish refuges, and city marine refuges. These designations restrict the take and disturbance of the intertidal zone to varying degrees, but generally afford tidepool habitats and organisms greater protection from both commercial and non-commercial impacts. Some allow the take of specified plants and invertebrates while others may prohibit both take and disturbance. A comprehensive list of these sites and their associated regulations is available at http://montereybay.nos.noaa.gov/research/techreports/marinezones/. With certain exceptions, the general rule provides that when separate entities issue conflicting permits, the more restrictive requirement controls.

The Sanctuary itself prohibits the alteration of the seabed without a permit (http://montereybay.nos.noaa.gov/resourcepro/prohibitions.html. However this regulation has generally been applied to tidepool visitation only if rocks are being removed from the site. MBNMS is a partner

with other agencies who directly regulate collecting of intertidal organisms in their efforts to prevent adverse impact to the intertidal zone.

Enforcement of collecting regulations is an ongoing challenge given the limited number of wardens available. Currently only four CDFG wardens cover the entire Sanctuary coastline, and are responsible for enforcing a wide range of regulations beyond those covering tidepools.

PLAN COMPONENTS:

Despite the initial efforts outlined above, most tidepool areas of the Sanctuary do not have significant monitoring and enforcement, signage or educational outreach strategies to minimize human impacts. In addition, there has not been a regional effort to assess usage and potential impacts and to prioritize sites that need additional attention. Working with the MBNMS Tidepool Workgroup, MBNMS developed a framework to collaborate with agencies and local communities to more thoroughly evaluate the issue and develop guidelines and programs for comprehensive education, enforcement, monitoring and management of the region's tidepools. Strategies involve recommendations for actions by a range of players in addition to actions that should be undertaken by the Sanctuary itself. A goal statement and initial list of strategies developed by the workgroup is provided below.

GOAL OF THE ACTION PLAN– Evaluate and reduce visitor impacts to tidepools.

STRATEGY MB-TP1 – FURTHER EVALUATE THE PROBLEM:

ACTIVITIES

1) Conduct a regional identification and prioritization of tidepool locations most subject to existing and potential damage, considering natural resources, presence of unique species assemblages, and heavily used access points (already initiated by workgroup)
   a) Continue refinement of workgroup's geographic matrix characterizing the region's tidepools, drawing on expert and public input, and add quantitative data where possible
   b) Conduct a rapid assessment of information in the matrix to provide a groundtruthed survey of identified sites
2) Assess and prioritize types and extent of impacts including collecting, trampling, and other disturbances from people, drawing primarily on existing studies
3) Conduct monitoring to understand natural versus human-caused changes, including adequate sites which are not accessible for use as a control to distinguish impacts (including continuation of PISCO projects)
4) Improve coordination among tidepool research and monitoring projects to facilitate data comparisons which track areas over time and compare impacted and nonimpacted sites
5) Improve packaging and distribution of existing research and make it available to managers and the public

6) Compile historical knowledge about key locations, including community-based and anecdotal information which can be used to raise public awareness
7) Conduct an evaluation of visitors at representative sites, including where they come from, what they are doing at the tidepools, frequency and timing of their visits, and their level of awareness of tidepool etiquette.
8) Assess potential impacts of closures or limitations on use at one site on impacts at other locations which are unrestricted, due to shifting patterns of use

STRATEGY MB-TP2 –STRENGTHEN EDUCATION AND OUTREACH

1) Building on Stategy 1 evaluations to target efforts, develop appropriate education and outreach strategies for the general public, schools, collectors/researchers and culturally diverse groups
2) Develop and disseminate readily understandable information about complex regulations and multiple jurisdictions to the public and agencies, and ensure visitors understand it is their responsibility to know the regulations
3) Strengthen education about tidepool etiquette and human impacts, along with general interpretive information
4) Establish a tidepool docent program for on-site outreach as part of an MBNMS naturalist corps to address lower-level infractions during peak visitation hours, and link with Baynet and other volunteer programs
5) Consider potential for hands-on exhibits or live display tables at selected tidepool sites which could reduce the need for hands-on activities in the tidepools themselves
6) Develop pre-visit education about tidepool etiquette, including at key visitor locations such as aquaria which often inspire subsequent field visits
7) Identify partners for education and outreach and establish an ongoing framework for joint efforts

STRATEGY MB-TP3 –STRENGTHEN ENFORCEMENT

1) Improve enforcement of existing regulations by developing more officers/wardens and attention to issue
2) Utilize enforcement to focus on higher-level infractions at any time and to provide coverage for off-peak hours when these larger violations often occur
3) Improve interagency coordination on enforcement to leverage field efforts, including MBNMS, CDFG, State Parks and local police
4) Define system of referrals from docents to enforcement officer where needed
   a) Include communication infrastructure needed to quickly contact enforcement officers
   b) Include guidance on when to call in enforcement
5) Establish and promote a call-in system and infrastructure for general public to report incidents for enforcement followup

6) Develop coordinated training with enforcement personnel and docents on how to effectively address issue

STRATEGY MB-TP4 –IMPROVE TRACKING AND EVALUATION OF TAKE

1) Develop information to estimate legal and illegal recreational take
   a) Improve tracking of use under state collection permit system
   b) Develop take information using CDFG citation data base
   c) Evaluate locations of MBNMS research permits for take and associated data available at sites
2) Improve consistency between existing federal, state and local data sources to facilitate integration and comparison, e.g. terminology and categories of invertebrate life used on forms
3) Work with existing and potential permitees to enhance knowledge of the permit process, including when permits are required, reporting needed, nontransferability of permits, etc.

STRATEGY MB-TP5 –CONSIDER LIMITATION ON USE IN SELECTED LOCATIONS

Evaluate alternative management options at locations where education and enforcement are unlikely to be sufficient:

1) Develop criteria for determining such sites—e.g. excessively high visitation
2) Develop reservation systems at key sites, including identification of carrying capacity and setting of caps on allowable numbers of visitors for locations with limited access
3) Develop temporary closures at selected sites, or roping off of particularly sensitive areas within a site
4) Consider restriction or redirection of coastal access via recommendations to CCC, State Parks or other agencies, including potential relocation of parking lots and access paths
5) Recommend consideration of tidepool state marine reserves in MLPA process, building on initial evaluations in workgroup's tidepool geographic matrix
6) If closures or visitation caps are recommended at key sites, identify alternative tidepool locations or visitation times to redirect the public, and develop education and enforcement at those sites as well
7) Redirect visitors or school groups to sites other than tidepools-e.g. Elkhorn Slough, sandy beach, etc.

STRATEGY MB-TP6 –EVALUATE EFFECTIVENESS OF MANAGEMENT EFFORTS

1) Develop system to evaluate success of selected examples of new education and management efforts, including initial baseline and controls

2) Include two levels of evaluation—effects on changing human behavior and effects on biological resources
3) Utilize adaptive management to revise and improve strategies as effectiveness information improves and cost/benefit information becomes available

STRATEGY MB-TP7 –IDENTIFY IMPLEMENTATION OPPORTUNITIES

1) Encourage increased multiagency funding and joint staffing to implement program
2) Develop voluntary contributions such as an Adopt a Tidepool program, location of "parking meter" donation systems at tidepool sites
3) Pursue grants to fund major efforts
4) Consider required contributions at some locations—e.g. user fees at parking lots or locations where access can be controlled

STRATEGY MB-TP8 –ADDRESS OTHER TYPES OF HUMAN ACTIVITIES

1) Address other types of human activities which negatively impact tidepools and rocky shores via inclusion in other JMPR action plans:

a) Ensure that coastal armoring such as rip rap does not harm sensitive tidepool locations

b) Reduce polluted runoff from agricultural lands, urban areas and parking lots onto sensitive tidepool locations

c) Reduce spills of sewage and oil or discharge of marine debris which can end up in tidepools

d) Review oil spill contingency plans to evaluate adequacy of spill clean up recommendations for rocky intertidal locations and ensure that methodology that will not do further damage

e) Reduce small boat groundings which can crush rocky intertidal life, and develop recovery programs or damage fees to be used for tidepool efforts when damage occurs

f) Reduce impacts from landslide disposal activities onto sensitive tidepool locations

g) Reduce visitor harassment of marine mammals which haul out on or near rocky intertidal locations

Citations:

DeVogelaere, A.P., M. Jacobi, R. Walder, M. Foster. 1999. A Summary of Rocky Shore Monitoring Projects in the Monterey Bay National Marine Sanctuary. Final Report to the California Urban Environmental Research and Education Center. No. 51-33-017-009.

Tenera Environmental, 2002. Proposal to Develop and Implement a Resource Assessment Project. Fitzgerald Marine Reserve. For San Mateo County Parks and Recreation.

* Although the term tidepools is used throughout this document, the work group intends this plan to refer to rocky intertidal habitats that are either in tidepools or in exposed areas.